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Deliver to: Daborah Chacko Davis, USPTO Art Group: 1756
Facsimile No.: (571) 273-8300 Date: March 21, 2008
From: Brent E. Vecchia, Reg. No. 48,011
Our Docket No.: 42P17301 Number of pages 23 including this sheet.
Application No.: 10/687,288 Filing Date: 10/15/2003
Docket Due Date(s): 3/25/2008

Enclosed are the following documents:

<input type="checkbox"/> Amendment: _____ (_____ pgs)	<input type="checkbox"/> Issue Fee Transmittal
<input type="checkbox"/> Appeal Brief (_____ pgs)	<input type="checkbox"/> Notice of Appeal (in duplicate)
<input type="checkbox"/> Application: _____ (_____ pgs)-w/cover & abstract)	<input type="checkbox"/> Petition for: _____
<input type="checkbox"/> Assignment & Cover Sheet (_____ pgs)	<input type="checkbox"/> Request for Continued Examination (RCE)
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<input type="checkbox"/> Declaration & POA (_____ pgs)	<input type="checkbox"/> Request to Rescind Previous Nonpublication Request
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TRANSMITTAL FORM (to be used for all correspondence after initial filing)		Application No.	10/687,288
		Filing Date	October 15, 2003
		First Named Inventor	Wang Yuch
		Art Unit	1756
		Examiner Name	Daborah Chacko Davis
Total Number of Pages in This Submission	23	Attorney Docket Number	42P17301

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> PTO/SB/08 <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Basic Filing Fee <input type="checkbox"/> Declaration/POA <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">Appeal Brief (in response to Notice of Non-Compliant Appeal Brief) & Facsimile Cover Sheet</div>
Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Brent E. Vecchia, Reg. No. 48,011 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	<i>Brent E. Vecchia</i>
Date	March 21, 2008

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FEE TRANSMITTAL for FY 2007

Patent fees are subject to annual revision

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT (\$)

Complete if Known

Application Number 10/687,288
Filing Date October 15, 2003
First Named Inventor Wang Yueh
Examiner Name Daborah Chacko Davis
Art Unit 1756
Attorney Docket No. 42P17301

METHOD OF PAYMENT (check all that apply)

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FEE CALCULATION

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1251	120	2251	60	Extension for reply within first month	
1252	460	2252	230	Extension for reply within second month	
1253	1,050	2253	525	Extension for reply within third month	
1254	1,640	2254	820	Extension for reply within fourth month	
1255	2,230	2255	1,115	Extension for reply within fifth month	
1401	510	2401	255	Notice of Appeal	
1402	510	2402	255	Filing a brief in support of an appeal	
1403	1,030	2403	515	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1460	130	2460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
1809	810	1809	405	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	810	2810	405	For each additional invention to be examined (37 CFR § 1.129(b))	

Other fee (specify) _____

SUBTOTAL (2) (\$)

SUBMITTED BY

Complete (if applicable)

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Signature	<i>Brent E. Vecchia</i>	Date	03/21/08		

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FEE TRANSMITTAL for FY 2007 <small>Patent fees are subject to annual revision.</small>		<i>Complete if Known</i>	
		Application Number	10/687,288
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.		Filing Date	October 15, 2003
		First Named Inventor	Wang Yueh
		Examiner Name	Daborah Chacko Davis
		Art Unit	1756
TOTAL AMOUNT OF PAYMENT (\$)		Attorney Docket No.	42P17301

METHOD OF PAYMENT (check all that apply)	
<input type="checkbox"/> Check <input type="checkbox"/> Credit card <input type="checkbox"/> Money Order <input type="checkbox"/> None <input type="checkbox"/> Other (please identify): _____	
<input checked="" type="checkbox"/> Deposit Account Deposit Account Number: <u>02-2666</u> Deposit Account Name: <u>Blakely, Sokoloff, Taylor & Zafman LLP</u>	
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FEE CALCULATION					
Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
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1809	810	1809	405	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	810	2810	405	For each additional invention to be examined (37 CFR § 1.129(b))	
Other fee (specify) _____					
SUBTOTAL (2)				(\$)	

SUBMITTED BY		<i>Complete (if applicable)</i>	
Name (Print/Type)	Brent E. Vecchia	Registration No. (Attorney/Agent)	48,011
Signature	<i>Brent E. Vecchia</i>	Telephone	(408) 720-8300
		Date	03/21/08

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Application. No. : 10/687,288
1st Named Inventor : Wang Yueh
Filed : 10/15/2003
Docket No. : 42P17301

Confirmation No. : 7538
Art Unit : 1756
Examiner : Daborah Chacko Davis
Customer No. : 8791

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF
IN SUPPORT OF APPELLANT'S APPEAL
TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Sir:

This brief is in furtherance of the Notice of Appeal, filed in the above-captioned case on September 28, 2007. Applicants (hereafter "Appellants") hereby submit this Brief (37 C.F.R. § 41.37). The fees required under § 41.20(b)(2), and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying Transmittal of Appeal Brief. Appellants respectfully request consideration of this appeal by the Board of Patent Appeals and Interferences for allowance of the above-captioned patent application.

An oral hearing is not desired.

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Page 14 of this brief bears the practitioner's signature.

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I. REAL PARTY IN INTEREST (37 C.F.R. § 41.37(c)(1)(i))

The real party in interest in this appeal is Intel Corporation of 2200 Mission College Boulevard, Santa Clara, California, 95052, to whom the invention is assigned.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 41.37(c)(1)(ii))

With respect to other appeals or interferences that will directly affect, or be affected by, or have a bearing on the Board's decision in this appeal, to the best of Appellant's knowledge, there are no such appeals or interferences.

III. STATUS OF THE CLAIMS (37 C.F.R. § 41.37(c)(1)(iii))

The status of the claims in this application are:

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims 21-35 are currently pending in the application.

B. STATUS OF ALL THE CLAIMS

1. Claims cancelled: 1-20.
2. Claims withdrawn from consideration but not cancelled: NONE.
3. Claims pending: 21-35.
4. Claims allowed: NONE.
5. Claims rejected: 21-35.

C. CLAIMS ON APPEAL

Claims 21-35 are on appeal.

IV. STATUS OF AMENDMENTS (37 C.F.R. § 41.37(c)(1)(iv))

A response was not submitted in response to the Final Office Action mailed on June 28, 2007. A response was submitted on 12/27/06 in response to the Office Action mailed 9/27/06. The response included amendments to the claims. The amendments were entered. A copy of all claims on appeal is attached hereto as an appendix of claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER (37 C.F.R. § 41.37(c)(1)(v))

Independent claim 21 pertains to a method, according to a first embodiment of the invention. See e.g., Fig. 6, paragraphs [0024] through [0028], and original claim 1. The method includes depositing a layer on a substrate. See e.g., block 605 of Fig. 6 and paragraph [0024]. The method also includes depositing a non-chemically amplified photoresist layer upon the layer. See e.g., the first sentence of the Abstract, block 610 of Fig. 6, and paragraph [0025]. The non-chemically amplified photoresist layer having a developer-soluble resin and a photoactive compound. See e.g., the second sentence of the Abstract, paragraph [0019], and original claim 1. The photoactive compound inhibiting solubility of the developer-soluble resin. See e.g. the fourth sentence of the abstract, original claim 1, paragraphs [0003], [0028], and [0031]. The method also includes exposing selected portions of the non-chemically amplified photoresist layer to an extreme ultra-violet light source (see e.g., block 615 of Fig. 1, paragraph [0027]) such that solubility of the selected portions of the non-chemically amplified photoresist layer is promoted (see e.g., paragraph [0027], the fifth sentence of the Abstract, and original claim 1). The method also includes developing the exposed portions of the non-chemically amplified photoresist layer. See e.g., block 620 of Fig. 6 and paragraph [0028].

Independent claim 30 pertains to a non-chemically amplified photoresist, according to a second embodiment of the invention. See e.g., the first sentence of the Abstract, original claim 10, and paragraph [0001]. The non-chemically amplified photoresist includes a resin that is soluble in a developer. See e.g., the second sentence of the Abstract, original claim 10, and paragraph [0019]. The non-chemically amplified photoresist also includes a photoactive compound. See e.g., the second sentence of the Abstract, original claim 10, and paragraph [0019]. The photoactive compound is distributed within the non-chemically amplified photoresist. See e.g., the third sentence of the Abstract, original claim 10, and paragraphs [0027] and [0029]. The photoactive compound to promote solubility of a selected portion of the non-

chemically amplified photoresist exposed to an extreme ultra-violet light source and to inhibit solubility of an unexposed portion of the non-chemically amplified photoresist. See c.g., the fourth and fifth sentences of the Abstract, original claim 10, paragraphs [0028] and [0031].

VI. GROUND S OF REJECTION TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi))

- A. Claim 27 is rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement.
- B. Claims 21-25 and 30-34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,759,739 to Takemura et al. (hereinafter Takemura) in view of U.S. Patent Application Publication No. 2005/0074699 by Sun et al. (hereinafter Sun); and
- C. Claims 21, 26, 30 and 35 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,358,599 to Cathey et al. (hereinafter Cathey) in view of U.S. Patent Application Publication No. 2005/0074699 by Sun et al. (hereinafter Sun).
- D. Claims 27-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,358,599 to Cathey et al. (hereinafter Cathey) in view of U.S. Patent Application Publication No. 2005/0074699 by Sun et al. (hereinafter Sun) as applied to claims 21, 26, 30, and 35 above, and further in view of U.S. Patent Application Publication No. 2004/0204328 by Zhang et al. (hereinafter Zhang), and U.S. Patent No. 6,261,738 to Asakura et al. (hereinafter Asakura).

VII. ARGUMENT (37 C.F.R. § 41.37(c)(1)(vii))**A. REJECTION OF CLAIM 27 UNDER 35 U.S.C. § 112, FIRST PARAGRAPH, AS ALLEGEDLY FAILING TO COMPLY WITH THE WRITTEN DESCRIPTION REQUIREMENT IS BELIEVED TO BE IMPROPER.****GROUP I: CLAIM 27**

Claim 27 recites "*wherein the non-chemically amplified photoresist layer does not include a photo-acid generator (PAG)*". The Examiner has asserted that "*there is no disclosure in the specification teaching that the non-chemically amplified generator does not include a photo acid generator (PAG)*". See e.g., page 2 of the Final Office Action mailed 9/27/06.

Appellants respectfully disagree. Paragraph [0005] discloses that "*For chemically amplified photoresists, the mechanism is different. Instead of PAC, Photoacid generator (PAG) is used.*" Paragraph [0031] discloses that "*Embodiments of the invention provide a non-chemically amplified photoresist (i.e., does not include PAG)*".

Accordingly, Appellants respectfully submit that there is sufficient written description for claim 27, and respectfully request that the rejection of claim 27 be overturned.

B. REJECTION OF CLAIMS 21-25 AND 30-34 UNDER 35 U.S.C. § 103(A) AS ALLEGEDLY BEING UNPATENTABLE OVER U.S. PATENT NO. 5,759,739 TO TAKEMURA ET AL. (HEREINAFTER TAKEMURA) IN VIEW OF U.S. PATENT APPLICATION PUBLICATION NO. 2005/0074699 BY SUN ET AL. (HEREINAFTER SUN) IS BELIEVED TO BE IMPROPER**GROUP II: CLAIMS 21-25 AND 30-34**

The Examiner has rejected claims 21-25 and 30-34 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,759,739 to Takemura et al. (hereinafter Takemura) in view

of U.S. Patent Application Publication No. 2005/0074699 by Sun et al. (hereinafter Sun). Appellants respectfully submit that claims 21-25 and 30-34 are allowable over Takemura and Sun.

Claim 21 recites a method comprising:

“depositing a layer on a substrate;

depositing a non-chemically amplified photoresist layer upon the layer, the non-chemically amplified photoresist layer having a developer-soluble resin and a photoactive compound, the photoactive compound inhibiting solubility of the developer-soluble resin;

exposing selected portions of the non-chemically amplified photoresist layer to an extreme ultra-violet light source such that solubility of the selected portions of the non-chemically amplified photoresist layer is promoted; and

developing the exposed portions of the non-chemically amplified photoresist layer”.

Accordingly, claim 21 pertains to a method of using a **non-chemically amplified photoresist layer** that includes a **developer-soluble resin** and a **photoactive compound** that inhibits the solubility of the developer-soluble resin. Furthermore, the method includes exposing selected portions of the non-chemically amplified photoresist layer to an **extreme ultra-violet light source**.

(1) Firstly, on page 3 of the Final Office Action mailed 6/28/07, the Examiner has admitted that “Takemura does not disclose that the photoresist layer is non-chemically amplified”.

However, the Examiner has asserted that “Sun, in [0039], discloses that the chemically amplified photoresist layer can be replaced with a non-chemically amplified photoresist layer”. See e.g., the bottom of page 3 of the Final Office Action mailed 6/28/07.

Paragraph [0039] of Sun recites:

[0039] The thin photoresist provides a number of important advantages to the photolithographic process. First, there are no outstanding photoresist patterns in the entire process. Dry etch masking is no longer required for the photoresist, making the photoresist more of a photosensitive layer rather than a photoresist. Second, the photoresist layer is so thin that transparency becomes less of a problem. Third, due to the extraordinarily thin photoresist, this invention opens an opportunity to replace the ever troubling chemically amplified photoresist with non-chemically amplified photoresists for the photolithography process of KrF or shorter wave-lengths. Fourth, chances for the protective layer and photoresist patterns to collapse are significantly reduced, if not completely eliminated, due to the low aspect ratios and the excellent adhesion of the protective layers to substrates. Fifth, the thinness of the photoresist will inevitably improve the pattern resolution. Sixth, the exposure focus offset has less impact on a thin photoresist than on a thick one. Critical dimension (CD) variation of the protective layer patterns due to different DOF is less significant due to the thin photoresist.

The Examiner appears to have relied upon the statement in paragraph [0039] that *"this invention opens an opportunity to replace the ever troubling chemically amplified photoresist with non-chemically amplified photoresists for the photolithography process of KrF or shorter wave-lengths"*. However, the section of Sun relied upon does not disclose that a non-chemically amplified photoresist in general be useful for **extreme ultra-violet (EUV)** lithography, but only for *"KrF or shorter wave-lengths"*. KrF lithography uses a deep ultra-violet (DUV) wavelength of about 248 nm. This statement might possible encompass other DUV wavelengths (e.g., 193nm). However, Applicants respectfully submit that this statement should not be construed to encompass the next-generation EUV lithography which uses a much smaller wavelength of about 13nm. Furthermore, materials suitable for DUV lithography commonly are not suitable for EUV lithography. Accordingly, the statement in Sun should not be construed to mean that non-chemically amplified photoresists in general are suitable for EUV.

Accordingly, neither Sun nor Takemura discloses or renders obvious a method of using a **non-chemically amplified** photoresist layer that includes a developer-soluble resin and a

photoactive compound that inhibits the solubility of the developer-soluble resin and that includes exposing selected portions of the non-chemically amplified photoresist layer to an **extreme ultra-violet** light source.

(2) Secondly, Takemura should not be combined with Sun since Takemura pertains to chemically amplified photoresist layers and Sun pertains to non-chemically amplified photoresist layers.

Accordingly, for at least one or more of these reasons, claim 21 and its dependent claims are believed to be allowable over Takemura and Sun.

Independent claim 30 and its dependent claims are believed to be allowable for one or more similar reasons.

For at least these reasons, the claims of Group II (claims 21-25 and 30-34) are believed allowable over Takemura and Sun.

C. REJECTION OF CLAIMS 21, 26, 30 AND 35 UNDER 35 U.S.C. § 103(A) AS ALLEGEDLY BEING UNPATENTABLE OVER U.S. PATENT NO. 5,358,599 TO CATHEY ET AL. (HEREINAFTER CATHEY) IN VIEW OF U.S. PATENT APPLICATION PUBLICATION NO. 2005/0074699 BY SUN ET AL. (HEREINAFTER SUN) IS BELIEVED TO BE IMPROPER

GROUP III: CLAIMS 21, 26, 30 AND 35

Claim 21 recites a method comprising:

“depositing a layer on a substrate:

depositing a non-chemically amplified photoresist layer upon the layer, the non-chemically amplified photoresist layer having a developer-soluble resin and a photoactive compound, the photoactive compound inhibiting solubility of the developer-soluble resin;

exposing selected portions of the non-chemically amplified photoresist layer to an extreme ultra-violet light source such that solubility of the selected portions of the non-chemically amplified photoresist layer is promoted; and

developing the exposed portions of the non-chemically amplified photoresist layer”.

- (1) Firstly, on page 4 of the Final Office Action mailed 6/28/07, the Examiner has admitted that “Cathey does not disclose that the photoresist layer is non-chemically amplified”.

However, the Examiner has asserted that “Sun, in [0039], discloses that the chemically amplified photoresist layer can be replaced with a non-chemically amplified photoresist layer”. See e.g., the top of page 5 of the Final Office Action mailed 6/28/07.

As discussed above, Appellants submit that paragraph [0039] of Sun does not disclose that a non-chemically amplified photoresist be suitable for **extreme ultra-violet (EUV)** lithography. EUV lithography is a next generation lithography using a much smaller wavelength than KrF lithography.

Accordingly, neither Sun nor Cathey discloses or renders obvious a method of using a **non-chemically amplified** photoresist layer that includes a developer-soluble resin and a photoactive compound that inhibits the solubility of the developer-soluble resin and that includes exposing selected portions of the non-chemically amplified photoresist layer to an **extreme ultra-violet** light source.

- (2) Secondly, Cathey should not be combined with Sun since Cathey pertains to chemically amplified photoresist layers and Sun pertains to non-chemically amplified photoresist layers.

Accordingly, for at least one or more of these reasons, claim 21 and its dependent claims are believed to be allowable over Cathey and Sun.

Independent claim 30 and its dependent claims are believed to be allowable for one or more similar reasons.

For at least these reasons, the claims of Group III (claims 21, 26, 30 and 35) are believed allowable over Cathey and Sun.

D. REJECTION OF CLAIMS 27-29 ARE REJECTED UNDER 35 U.S.C. § 103(A) AS BEING UNPATENTABLE OVER U.S. PATENT NO. 5,358,599 TO CATHEY ET AL. (HEREINAFTER CATHEY) IN VIEW OF U.S. PATENT APPLICATION PUBLICATION NO. 2005/0074699 BY SUN ET AL. (HEREINAFTER SUN) AS APPLIED TO CLAIMS 21, 26, 30, AND 35 ABOVE, AND FURTHER IN VIEW OF U.S. PATENT APPLICATION PUBLICATION NO. 2004/0204328 BY ZHANG ET AL. (HEREINAFTER ZHANG), AND U.S. PATENT NO. 6,261,738 TO ASAKURA ET AL. (HEREINAFTER ASAKURA) IS BELIEVED TO BE IMPROPER

GROUP IV: CLAIMS 27-29

Appellants respectfully submit that claims 27-29 depend from claim 21. As discussed above, claim 21 is believed to be allowable over Cathey and Sun. As understood by Appellants, Zhang and Asakura do not remedy what is missing from Cathey and Sun. In particular, Zhang and Asakura do not disclose or render obvious a method of using a **non-chemically amplified** photoresist layer that includes a developer-soluble resin and a photoactive compound that inhibits the solubility of the developer-soluble resin and that includes exposing selected portions of the non-chemically amplified photoresist layer to an **extreme ultra-violet** light source. Furthermore, the Examiner has not relied upon these references to disclose these limitations.

Accordingly, claims 27-29 are believed to be allowable over these cited references for at least this reason.

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CONCLUSION

Based on the foregoing, Appellants request that the Board overturn the rejection of all pending claims and hold that all of the claims of the present application are allowable.

Appellants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17 for such an extension.

Please charge any shortages and credit any overpayment to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 3/21/08

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VIII. CLAIMS APPENDIX (37 C.F.R. § 41.37(c)(1)(viii))

The text of the claims involved in the appeal are:

1 - 20. (Cancelled)

21. (Previously Presented) A method comprising:

depositing a layer on a substrate;

depositing a non-chemically amplified photoresist layer upon the layer, the non-chemically amplified photoresist layer having a developer-soluble resin and a photoactive compound, the photoactive compound inhibiting solubility of the developer-soluble resin;

exposing selected portions of the non-chemically amplified photoresist layer to an extreme ultra-violet light source such that solubility of the selected portions of the non-chemically amplified photoresist layer is promoted; and

developing the exposed portions of the non-chemically amplified photoresist layer.

22. (Previously Presented) The method of claim 21, wherein the developer-soluble resin comprises a polyhydroxystyrene-based compound.

23. (Previously Presented) The method of claim 22, wherein the photoactive compound comprises a phenyl group.

24. (Previously Presented) The method of claim 21, wherein the solubility of the selected portions of the non-chemically amplified photoresist layer is promoted by the photoactive compound forming an acid.

25. (Previously Presented) The method of claim 24, wherein the acid is a carbonyl acid.

26. (Previously Presented) The method of claim 21, wherein the developer-soluble resin is produced through a free radical polymerization process using a component selected from the group consisting of vinyl acid, vinyl phenol, and vinyl phenol substitutes.

27. (Previously Presented) The method of claim 21, wherein the non-chemically amplified photoresist layer does not include a photo-acid generator (PAG).

28. (Previously Presented) The method of claim 27, further comprising:

etching portions of the layer underlying the exposed portions of the non-chemically amplified photoresist layer; and

etching a remaining portion of the non-chemically amplified photoresist layer to produce a patterned layer having one or more features, at least one of the features having a critical dimension of approximately 15 nanometers.

29. (Previously Presented) The method of claim 28, wherein the at least one feature has a line wide roughness of less than 2 nanometers.

30. (Previously Presented) A non-chemically amplified photoresist comprising:

a resin that is soluble in a developer; and

a photoactive compound, the photoactive compound distributed within the non-chemically amplified photoresist, the photoactive compound to promote solubility of a selected portion of the non-chemically amplified photoresist exposed to an extreme ultra-violet light source and to inhibit solubility of an unexposed portion of the non-chemically amplified photoresist.

31. (Previously Presented) The non-chemically amplified photoresist of claim 30, wherein the resin comprises a polyhydroxystyrene-based compound.

32. (Previously Presented) The non-chemically amplified photoresist of claim 30, wherein the solubility of the selected portion of the non-chemically amplified photoresist is promoted by the photoactive compound forming an acid.

33. (Previously Presented) The non-chemically amplified photoresist of claim 32, wherein the photoactive compound comprises a phenyl group.

34. (Previously Presented) The non-chemically amplified photoresist of claim 32, wherein the acid is a carbonyl acid.

35. (Previously Presented) The non-chemically amplified photoresist of claim 30, wherein the resin is produced through a free radical polymerization process using a component selected from the group consisting of vinyl acid, vinyl phenol, and vinyl phenol substitutes.

IX. EVIDENCE APPENDIX (37 C.F.R. § 41.37(c)(1)(ix))

To the best of Appellant's knowledge, no evidence has been submitted pursuant to 37 CFR Sections 1.130, 1.131, or 1.132.

X. RELATED PROCEEDINGS APPENDIX (37 C.F.R. § 41.37(c)(1)(x))

(To the best of Appellant's knowledge, there are no related appeals or interferences.)